

Expression of city edges in different cultures and its influence on urban landscape design: a comparison between the urban-rural interface in Brazil and New Zealand medium-sized cities

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Abstract. *Medium-sized cities are common in Brazil and are responsible for local regional development. The rapid development of these cities results in urban territorial expansion and the substitution of natural landscapes for urban ones. That is, productive land is substituted for urban development. A similar phenomenon has occurred in New Zealand in the last 15 years, where farms located close to cities have recently become urbanised. The main objective of this study is to compare and analyse the cities' edges and the interface between urban and rural environments, based on socio-cultural, political and economic values. Both cultural urban landscapes studied in this paper have specific characteristics. This paper explores the conceptual differences of urban fabric in both cities and discusses principles that should be respected in urban landscape design to achieve urban forms that respect the local cultures.*

Keywords: medium-sized city, urban edges, urban-rural landscape, Uberlândia, Christchurch

Introduction

Comparative studies between cities allow the understanding of different situations and contexts, essential to the body of knowledge related to varied urban topics. The main objective of this article is to compare and analyse city edges and the interface between urban and rural environments. This analysis is based on political and economic values.

The central hypothesis of this work is that the cultural relationship between the citizen and the natural environment is reflected in the peripheral urban form of both cities, creating different morphological patterns. In these areas, morphological characteristics determine the local landscape, and socio-cultural, economic and political characteristics define the urban form of these landscapes. Focusing on this central hypothesis and the main objective, two medium-sized cities were compared: Uberlândia in Brazil, located in the Triângulo Mineiro region, Minas Gerais State, and Christchurch in New Zealand, located in the Canterbury region (Fig. 1).

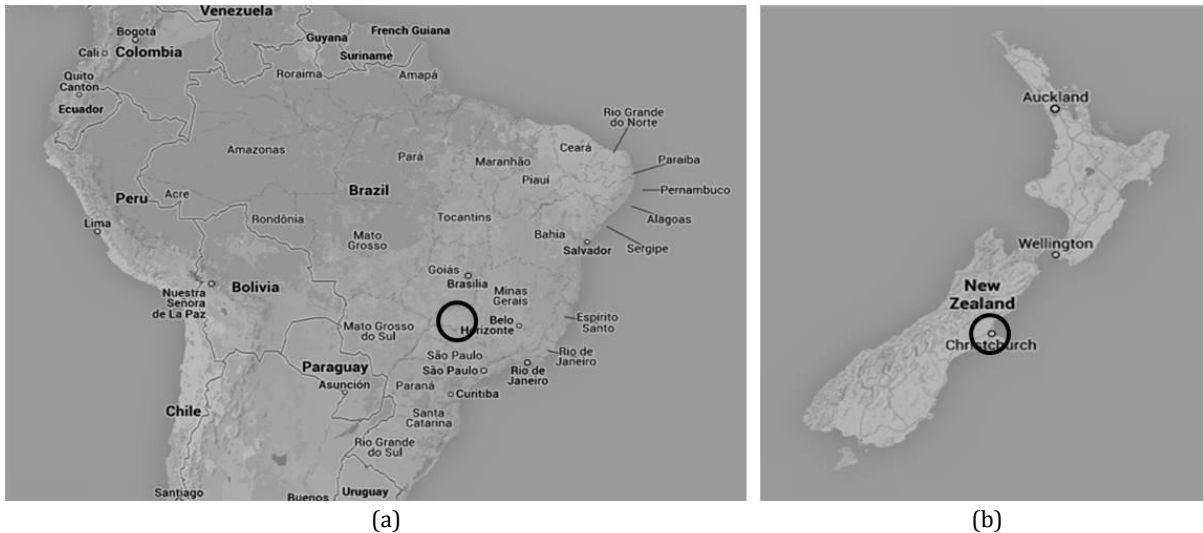


Figure 1. Satellite image showing Brazil (a) and New Zealand (b), identifying the cities of Uberlândia and Christchurch

Source: Modified from Google Earth, 2013

Methodology

The adopted methodology was based on the concept of landscape unit¹, which was used to investigate the morphological characteristics of each city. The results were analysed and discussed based on the resulting condition of the city edges.

The case studies

The investigation was based on two case studies: Uberlândia in Brazil, and Christchurch in New Zealand.

Uberlândia

Uberlândia is located in Triângulo Mineiro, a region situated between Grande and Paranaíba rivers in the west of Minas Gerais State. The region plays an important role for the country's economy and has experience rapid urban development. Uberlândia is the second largest city of the interior of Brazil.

The development of Uberlândia urban area started in 1835. The implementation of the new urban development displayed some basic characteristics such as the choice for a site located on a hillside, in a place with little slope, and perpendicular to the church and a river. Like many cities in the region Uberlândia was based on a morphological pattern where the Catholic Church and its churchyard formed the core of new settlements.

Uberlândia has a high human development index and is the second most populous city in population in the state of Minas Gerais. Its economy is based on services and agribusiness.

Christchurch

Christchurch is New Zealand's third largest urban area and the largest city on the south island. The city is bordered by the Port Hills and the Pacific Ocean, and is situated on the edge of the Canterbury Plains. Between 2010 and 2012, Christchurch experienced a series of destructive earthquakes. Many areas of the city, such as its Central Business District (CBD) parks, squares, hills and beaches, have also been affected. Before the February 2011 earthquakes, Christchurch had 376,700 inhabitants, but the population has since declined to around 363,000 (Statistics New Zealand, 2013).

The city is known as the Garden City for its many green areas and urban landscapes; a result of a Victorian style of planning adopted by the Canterbury Association in 1850 (Christchurch City Council, 2013).

Surrounding the historic area – or the Central City – is the area that transitions to the peripheral region, characterised by a region with multi-storey building fewer public spaces and intended for offices and other commercial and industrial activities. The peripheral region – the suburbs – is characterised by generally homogeneous architectural typology. Some differences can be perceived especially near the hills, but almost all with lower density, predominantly residential land use and directly interfacing with the landscape surrounding the city.

Christchurch is also regarded as the most English city outside of England and it carries the legacy of an urban design based on the quality of open spaces and intense urban-rural relationships. These relationships are a result of an economy based on the value of agriculture land which comprises the green belts surrounding the city. The landscape units identified in Christchurch highlight the premises that guide the city's urban design, enhancing a public life and greater contact with the natural environment.

Medium-Sized Cities

According to Costa (2002), the concept of medium-sized city was first adopted in France at the end of the 1960s. At that stage the 6th Economic and Social Development Policy was under development (1971-76). The concept of medium-sized cities has gained importance in the 1970s because of the crisis of many metropolitan areas. These cities also became an alternative for businesses and population of the big cities.

The concept of medium-sized cities varies according to the country where it is applied, and two aspects can be highlighted as the most common for its definition. The first aspect is related to the cities' size and its urban scale, where each country defines the number of inhabitants that characterise the population of a medium-sized city. The second aspect is based on the city structure and its relationship with the territory where it is located. In this article we define both studied cities as medium-sized cities due to their urban structure and regional importance. Both cities are important regional centres in their countries.

Medium-Sized Cities in Brazil

In the past 40 years Brazil has been developing its interior regions through a rural economy. Medium-sized cities are very important to the country's development. These cities concentrate investments, skilled labour, universities, and other important services. They also provide a better quality of life than in most large Brazilian cities. The concept of medium-sized cities in Brazil is related to the number of inhabitants in the settlement. From 100,000 to 500,000 inhabitants is considered a medium-sized city, and there may be variations according to its regional status (Andrade and Serra, 2001). Although Uberlândia's population is larger than this limit with a population of approximately 600,000 inhabitants, it still fits the medium-sized city profile because it maintains characteristics that distinguish it from a metropolis.

Medium-Sized Cities in New Zealand

New Zealand is a young country with a much smaller population. The number of people and size of urban centres is reflected in its urban network (Fig. 2), and the adopted definition of a medium-sized city is different from the Brazilian model. In New Zealand, any urban area with a minimum of 30,000 inhabitants is considered a main urban area.



Figure 2. Urban network in Canterbury (a) and Triângulo Mineiro, in Minas Gerais State (b)

Source: Google Maps modified by Glauco Coccozza, 2013

Auckland is the only city that has a population larger than Uberlândia, and only seven cities in the country have more than 100,000 inhabitants (Statistics New Zealand, 2013). In Uberlândia's region, six cities have over this population and together they total two million inhabitants.

Landscape Units

Landscape unit is understood as a territorial portion of the city where the morphological patterns are similar (streets, buildings, blocks, lots and others). According to Silva (2012), the method of reading the landscape through its units contributes to the understanding of urban form. We understand that this concept provides a broad understanding of the combination between natural, contextual and built environment.

The concept of landscape units was used as a tool to identify the elements of urban form that conform due to the urbanisation process of medium-sized cities, provides an important discussion of the interfaces between urban fabric, environmental quality, ownership and management of urban spaces.

In both studied cities, some specific features can be observed in morphological patterns which define landscape units. These are the result of a centre-periphery occupation, which consolidate the ring that surrounds the central regions and intensify the relationship with the city limits.

Uberlândia

In Uberlândia, landscape units occur in larger quantities² (Coccozza et al., 2011), due to the diversity of patterns derived from the historical process of its urbanisation, by policy and by new settlements that emerge on the city's periphery (Fig. 3).

Uberlândia's peripheral zone is predominantly residential with varied morphologic patterns. These patterns are mainly low rise buildings, residential neighbourhoods with large lots, and both a standard orthogonal neighbourhoods for low income families and areas intended for high income earners.

The units identified demonstrate the morphological diversity of the two cities, which is partly a consequence of specific socio-cultural values in each country. Uberlândia's historical areas are a result of Portuguese urban styles combined with Brazilian urbanisation processes. The urban environment is a result of the transformations that both Portuguese and Brazilian urbanism had throughout history. Its historical part is poorly preserved, but traces remain of urban culture that prevailed in the mid 19th century. The city is currently expanding in different directions, converting the countryside into urban. In this process some valleys are protected for specific leisure uses.

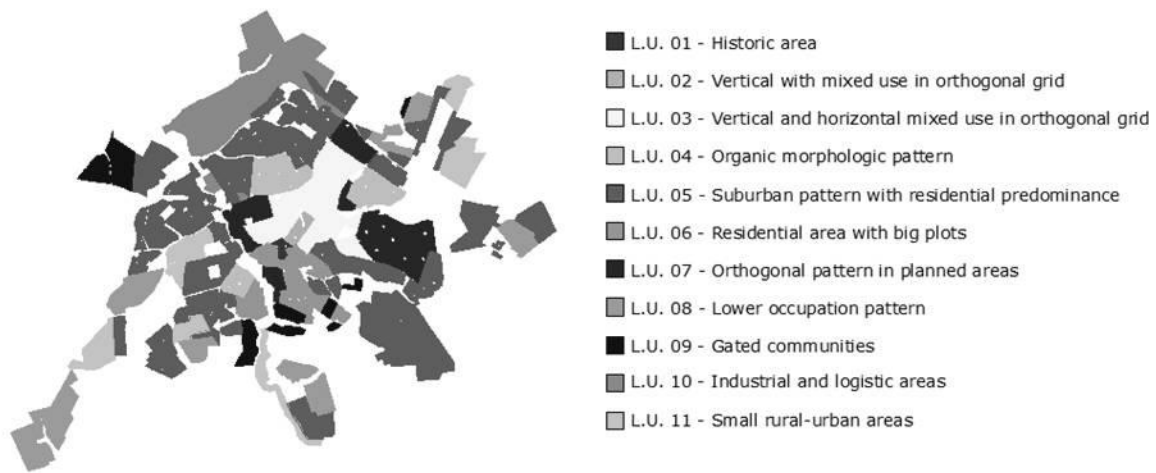


Figure 3. Landscape Units in Uberlândia
 Source: Lucas Oliveira, 2013

Christchurch

Christchurch is in a different context and, despite the recent challenges imposed by the earthquakes, the city is an important regional centre and commercial gateway to the south.

In comparing the cities, the main difference is the geographical condition of each city. While Christchurch is located on the Canterbury plains, between the coast and a mountain range, the Southern Alps, Uberlândia is located in a region of plateaus in the interior of Brazil. The characteristics of each spatial production process define its resulting urban form, and consequently Christchurch has fewer morphological units within the city, resulting in a more homogeneous urban configuration, while Uberlândia presents a greater number of units throughout the urban fabric.

Christchurch is defined by six landscape units as shown in Fig. 4. The most iconic one, which stands out in satellite images, is the central and historic area, with historical buildings, the highest density in the city, and a good relationship between built and open spaces³.

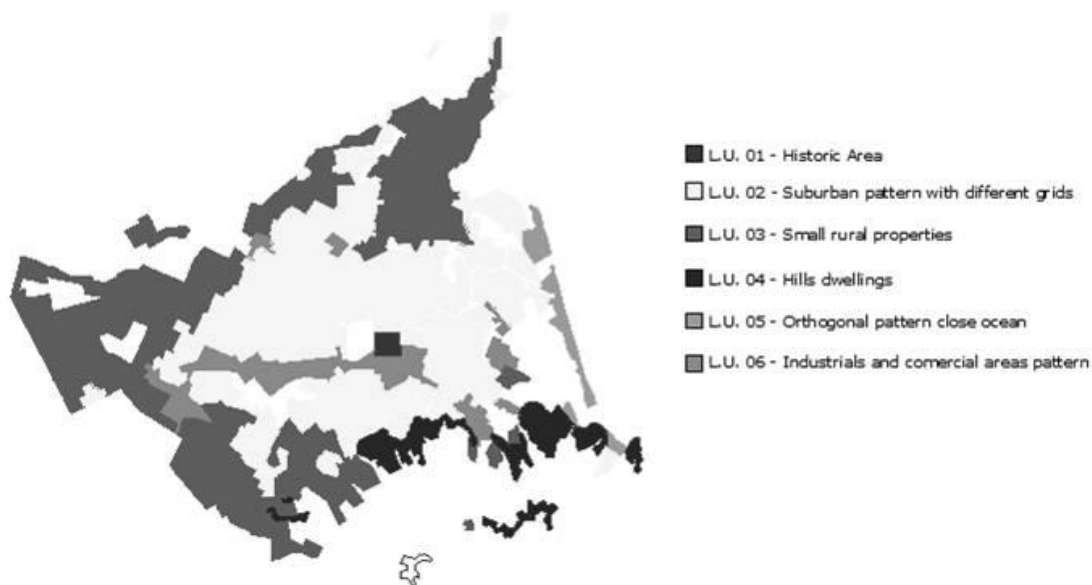


Figure 4. Landscape Units in Christchurch
 Source: Lucas Oliveira, 2013

Edges of the cities

In a general sense, Uberlândia is similar to Christchurch in its macrostructure, as the old centre is bounded by a more vertical region. It is different in relation to its uses, which are more diversified than in Christchurch. Therefore, the main difference is the existence of a transitional area, separating the centre from the periphery. Morphologically, this transitional region has orthogonal design, medium density, old houses and sheds, and hosts a concentration of services and trades, which generates a diversity of building typologies⁴, moreover it has recently presented vertical growth.

As a result of the urban-rural configuration process, six factors can be highlighted. These factors or characteristics determine the differences and similarities between the morphological patterns of Uberlândia and Christchurch peripheral regions:

- The limits between urban and rural
- The relationship between farm size and morphological pattern configuration
- The spatial heterogeneity or homogeneity
- Policy and specific plans for areas
- Discontinuity and continuity of urban fabric
- The local cultural condition.

These six factors generate three main topics that differentiate the condition of the edges of the cities. As discussed below, the three main topics are spatial quality, adaption to the land and the configuration of rural areas.

Spatial quality

In Uberlândia property speculative, especially in the periphery, is also resulting in large land holdings owned by a few people. Therefore market interests dictate the type of occupation and this results in large properties surrounding the urban centre. In some cases they are gradually parcelled and divided between families. As a result of this process, many areas were turned into urban land.

Uberlândia's periphery is configured for providing shelter for people who cannot live downtown. Housing for low income families is built in the periphery and leased by the government or private companies. The same region is also the focus of the speculative activity of high income groups, due to its large available areas with high construction potential. If the coexistence of both social classes occurred in a less segregated way this type of occupancy would be a good strategy, but marked spatial segregation is perceived in the edges of cities that adopt this approach.

The dichotomy between private and luxurious neighbourhoods with low spatial quality is also a consequence of market characteristics in Uberlândia's peripheral region. The ideal of a suburban life where families can have better environmental quality, lower density and more interaction with the natural environment is the aim of the population of both cities. Although the ideal exists for both, it occurs with greater intensity in Christchurch, where living in the peripheral zone is more an option than the "only solution". In many Brazilian cities, including Uberlândia, to live in the suburbs, which are an ideal but not a reality of high quality of life, is the only option.

Christchurch's periphery presents a very different reality. The great homogeneity perceived in Christchurch is also a consequence of New Zealand's social condition, where there is less difference between classes, greater income distribution and higher quality of life in the urban suburbs. A downside is related to the spatial quality, as this homogeneity also generates monotonous suburbs without much spatial variation (Figure 5).

The situation identified in Brazil is a consequence of urban policies that have been adopted by local authorities. Many Brazilian cities were concerned with their peripheral areas and acted to plan these areas and develop proposals for low density occupation, mostly focused on rural environments and connecting them to the urban areas. Brazil experienced rapid urban growth in the middle 20th century and the lack of management and planning are evident in many suburban patterns. In medium-sized cities that process was consolidated mainly in the early 1980s, when middle class families moved to the suburbs searching for a better quality of life. Concomitantly, urban and housing policies were focused on allocating housing to low income families, although the housing provided was of very low quality; the resulting urban space defines the current Brazilian peripheries landscape.

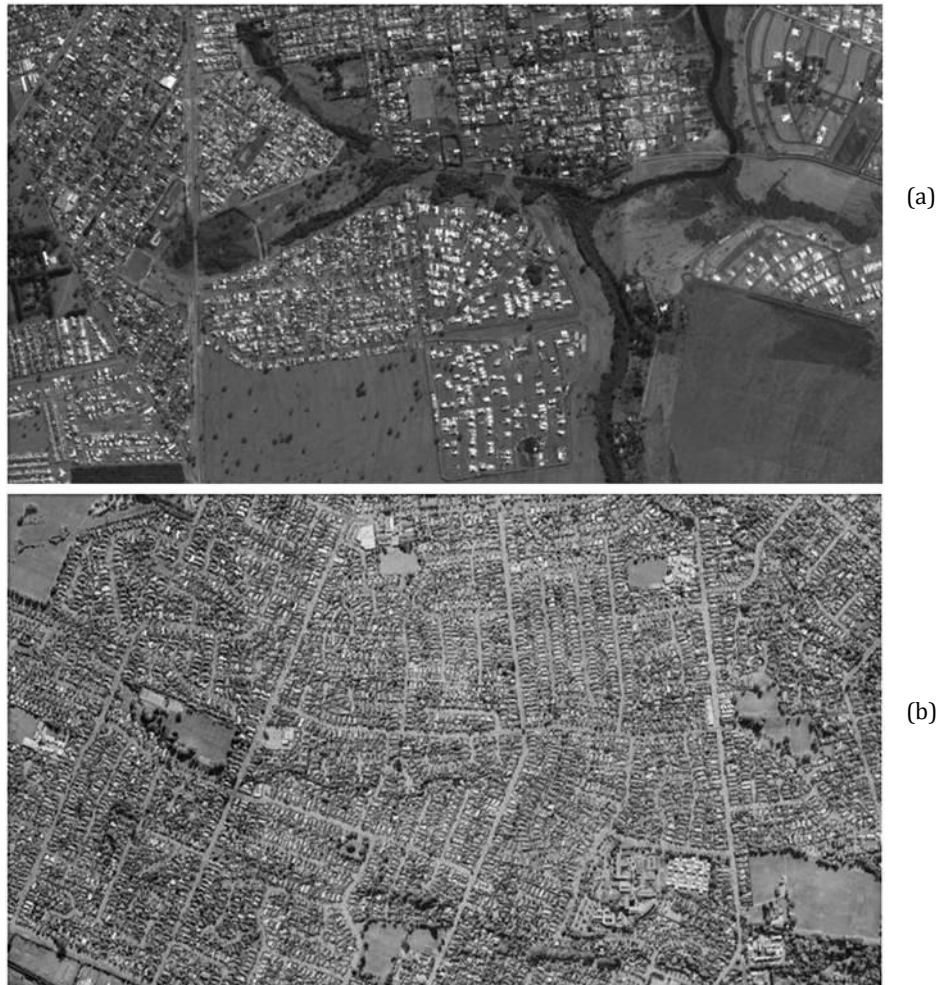


Figure 5. *Heterogeneity and homogeneity. Uberlândia with many morphologic patterns (a), and Christchurch less morphologic variations (b).*
Source: Google Earth, 2013

In contrast to Brazil's planning, Christchurch City Council undertakes careful planning for peripheral neighbourhoods. The planning is focused on several aspects such as commercial areas and green spaces, as well as policies for rehabilitation and reuse of urban and rural areas. With the intention of promoting the quality of urban environment, Christchurch City Council has adopted some strategies focused on respecting the local context and characteristics, promoting diversity, creating varied urban connections and developing a sense of urbanity within the local community.



Figure 6. North West Christchurch occupation plan. This image shows the care with the edge areas.
 Source: Google Earth modified by Glauco Coccozza, 2013

The ability of the local government in defining these strategies in accordance with local economic, urban, socio-cultural and environmental conditions is an important characteristic. This ability becomes clearer on urban plans that emphasise both the city's history and spatial characteristics, and its contemporary characteristics. The difficulties faced after the recent earthquakes highlighted social and political cohesion in a post-disaster context of a city that has to be largely rebuilt. Uberlândia, on the other hand, seeks to promote urban quality through build infrastructures focusing on generating employment and quality of life.

Another important difference is the amount of information and proposals provided by the Christchurch City Council and available to the community in contrast with the absence of Uberlândia's local plans. In Uberlândia zoning law determines how the city's territory is occupied, and a consequence of this process is limited morphological urban design potential. Therefore, most of Uberlândia's urban area has not been planned according to morphological aspects, and its morphology is a result of land regulations and its zoning law. The city relies on large urban restrictions to innovative planning and design, while facilitating profit related activities in the process of spatial production, especially in the periphery of the city. This scenario reflects the current context of Brazilian urbanism, which is focused on specific and speculative urban design actions with little integration with the local landscape.

Adaption to the land

The second aspect of peripheral urban form in both cities is the cultural relationship that residents have with urban, rural and natural spaces. New Zealand's outdoor culture and relationship with the environment is a main factor influencing the aspects previously discussed (Tavares et al., 2013). Christchurch is located between the mountain and the sea; recreational activities related to these landscapes prompt a strong interaction and attachment with the natural environment. This relationship is reflected in the edge of the city, where residential unities count on a large amount of open space. Christchurch is also known as the Garden City, as previously described, and extensive care for the front and backyards is easily perceived. Also at the neighbourhood scale there are a large number of public parks.

In the interior of Brazil, interaction with the environment also exists, but it is not translated into morphological patterns that foster greater integration between peripheral urban spaces and natural environment. The surroundings of Uberlândia present various spaces for outdoor activities – such as farms, ranches, rivers and dams – but the disconnection between the peripheral urban space and the natural environment interferes with the daily life of the edge areas residents.

Regarding the social classes, there is also a difference in the possibilities of enjoying and being connected to natural spaces. Neighbourhoods intended for low income population lack quality public spaces, while in upper class neighbourhoods the stronger relationship with nature is a consequence of marketing conditions that favour private spaces reserved for this small portion of the population.

Rural areas

In Uberlândia, an interesting aspect of the urban perimeter is that large properties induce a design disconnected to the pre-existent landscape around it. There are still large urban voids within the city, which are configured by unoccupied areas due to specific interests defined by the market. The investors' strategy is usually to create neighbourhoods in the peripheral areas while they wait for the inner city lands to increase in value. As the owners of these unoccupied urban lands are the same owners of large peripheral urban areas, urban voids are generated.

Christchurch limits between urban and rural are less evident (Fig. 7). The integration between the city's morphological patterns and the peripheral spaces for rural activities are represented in a gradual and more connected change in the landscape. This circumstance generates a morphological pattern that allows for greater continuity between the urban area and its surroundings. In contrast, Uberlândia has its city limits as physical, cultural and environmental segregated areas.

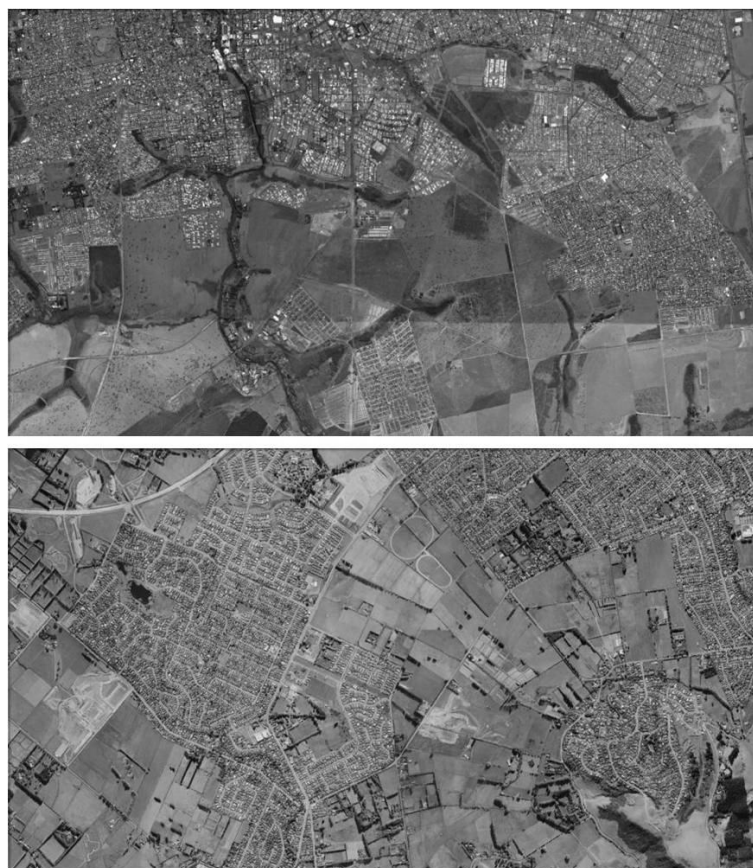


Figure 7. Rural properties around the city. Larger properties in Uberlândia (a), smaller rural areas in Christchurch (b).
Source: Google Earth, 2013

Both Canterbury and Triângulo Mineiro historically have a close relationship with the rural environment, and in both cases it enhances the local economy and defines urban networks. A remarkable feature in the peripheral morphological patterns is the size of farms around Christchurch. The farms form a ring of small properties used as productive farms or lifestyle blocks⁵, which extends into the great plain around the city. Small towns are connected to Christchurch through these properties, creating an urban-rural network,

and producing a cultural landscape for a common way of life for the local population. These small farms produce an urban fabric where the urban-rural transition is gradual and integrated. As a result, the landscape references the territory through a design that responds to the specific local lifestyle requirements and land conditions.

Historically, Brazil is characterised by large rural properties, due to the country's large territorial area and the difficulties in occupying the interior of the country. The occupation of these interior areas was only consolidated in the middle of the 20th century and Triângulo Mineiro's urban network was consolidated during this period. Nowadays the region is still comprised of cities that are located long distances from each other, and this is a result of large properties that formed the local ancient villages. Uberlândia's region relies on varied farm types based on agriculture or livestock, and these farms are mostly large properties, the product of the process of occupation of the Brazilian countryside. Whereas the large properties are predominant, some small farms coexist in the area as a result of large farms subdivision. These small properties are called "chácaras" and many of them are provide leisure for the local population, similar to the lifestyle blocks found in Christchurch.

Conclusion

In this paper we identified six main factors that generate the discussed configuration of city edges. They are: the urban-rural limits; the relationship between farm size and morphological pattern configuration; spatial heterogeneity or homogeneity; policy; urban fabric discontinuity or continuity; and the local culture.

This work demonstrated some socio-cultural, political and economic aspects that define the relationship between the citizen and the natural or rural environment. This relationship is reflected in the urban form of peripheral areas of both Christchurch and Uberlândia, creating different morphological patterns. This study also showed that different processes of spatial configuration are crucial when the topic under study is the peripheral region. The periphery is economically valued in Brazil, but it is also a place of contrasts and social conflicts which is segregated from the rural and the natural environments. In contrast, peripheral regions in New Zealand are culturally valued and intensely connected to urban and rural environments.

The comparison of these two different realities highlights some thoughts that individual case studies would not reveal. It is like looking from outside to our own reality, without preconceptions, where we can observe what actually defines some patterns and morphological characteristics in diverse contexts.

The diversity of morphological patterns presented indicates that the cities' peripheral edges reflect a cultural condition which integrates or segregates the cities' urban and rural spaces. The identification of socio-cultural values, in both Brazil and New Zealand, in relation to the cities' peripheral regions reflect the value that the nations attribute to these two spheres of life – urban and rural – in medium-sized cities. While in New Zealand living in the periphery is an option for most residents who wish to be directly connected to rural and natural environments, in Brazil it is less an option as an area occupied by those excluded from the central areas. The conditions of peripheral areas in Brazil also vary according to political, economic and social aspects.

The condition of the city limits are a socio-cultural consequence. Brazilian medium-sized cities are generally focused on establishing themselves as regional centres with great economic potential and varied activities that attract people of various regions⁶. The surrounding rural areas supply food for the city and generate employment, income and recreation for residents. Therefore the rural areas were and still are important to the city sustainability, but nowadays they configure a barrier to urban development. In Uberlândia there are still some natural areas and agricultural production within the urban limits, but these areas are disconnected from the urban surroundings. The reality in Christchurch is different, as the agrarian economy and outdoor culture are factors that contribute to the integration between urban and rural limits (Tavares et al., 2013).

Every society seeks to identify with their environments and generate a sense of place. However, in this comparative study, it became clear that New Zealand's society has a much clearer idea about the role of cities' periphery and its environment than Brazilian society. In Brazil the cities' periphery is fragile and unstable as a consequence of the lack of identity combined with poor political and economic conditions for providing quality of life to medium-sized city residents. Urban section configurations in specific areas of the city are a consequence of socio-cultural, environmental and economic variables. The understanding of the morphological patterns of peripheral urban areas helps to identify spatial production processes.

Acknowledgement

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Endnotes

¹ Morphological units identified in the urban fabric. These morphological units are aggregated by similarity of morphological elements.

² Shows how the average Brazilian city with its centre, sub-centre, peripheral ring and discontinuous periphery.

³ In 2010 and 2011 earthquakes extensively destroyed Christchurch Central City. After two years some buildings are still being demolished, and the area has been turned into a "rebuilding site" through a redevelopment project of its urban space.

⁴ In the case of Uberlândia, the Mogiana Rail Company was responsible for orthogonal urban design that connected the old town to railway.

⁵ "Lifestyle block", as it is known in New Zealand, is also known as "hobby farm" in other countries. It is a small farm maintained for recreation without expectation of being the main source of income, although some can generate an additional profit. It is more a country home than a business.

⁶ The last demographic survey showed that 70 percent of Uberlândia's residents are not born in the city. In Christchurch the opposite occurs and many residents move to Auckland or Australia searching for opportunities.

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